

The INSTITUTE Spokesman



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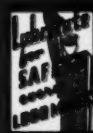
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Pirate's Alley is between Cabildo and St. Louis Cathedral. Picture courtesy of
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The INSTITUTE SPOKESMAN

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N. L. G. I. Secretary to Lecture At Northwestern University



HARRY F. BENNETTS

An unusual honor has been accorded the N.L.G.I. through an invitation received by its Secretary, Harry F. Bennetts to lecture at the National Institute held at Northwestern University for the past 26 years.

Conducted under the joint auspices of: Northwestern University, American Trade Association Executives, Chamber of Commerce of the United States and the National Association of Commercial Organization Secretaries; the National Institute is held for one week during August for the training of trade as-

sociation and chamber of commerce executives to do a better job for their organizations and American business.

Subject assigned for Bennetts' lecture is "Meetings and Conventions."

ABOUT THE COVER . . .

The test performed here highlights two outstanding advantages of aluminum stearate greases: (1) crystal transparency; (2) heat resistance.

This sample of aluminum stearate grease of No. 2 consistency, prepared in the laboratory of Metasap Chemical Company, Harrison, N. J., is shown heated to a temperature of 150°C.

The crystal transparency of the grease is evidenced by the ease with which the lower end of the thermometer can be seen (and, in actual practice, read). Such clarity not only affords an easy check on quality, but stimulates tremendous consumer appeal.

The stability of the grease at comparatively high temperatures is attested by the fact that no indication of separation or decomposition is to be seen. On the contrary, the smear on the upper portion of the beaker gives proof that this aluminum stearate product has lost none of its efficiency as a lubricant.

Such stability, plus the capacity to withstand the washing action of water, makes stearate greases especially suitable for aviation lubrication, and for machinery required to give top-level performance for long periods under adverse conditions.



ANNUAL MEETING - OCTOBER 3-5, ROOSEVELT HOTEL, NEW ORLEANS

President's page

by B. G. Symon, President N.L.G.I.



Almost four years after V-J Day, many of the problems facing our industry can still be traced directly to the war. I want to mention two of them briefly: first, inventory control; second, specification buying.

Many manufacturers still have stocks of materials in their warehouses that were manufactured during the war years for specific war needs. And some companies still list war grades in the regular lines, adding to the confusion that the multiplicity of greases had produced in customers' minds even before the war.

Now that the law of supply and demand is once more functioning normally, proper control of inventories is particularly important in our economic setup. To compete successfully in today's market, a company must reduce operating costs through more efficient distribution—of which tight inventory control is an essential ingredient.

This means that war stocks must be disposed of and unnecessary grades must be eliminated. Companies which are lax in making these adjustments will find it impossible to reduce capital investment in warehouse and handling facilities. They will also find their operations becoming increasingly uneconomical in the present highly competitive market.

I am happy to say that most companies are aware of these problems, particularly the need for reducing the number of grades. This is borne out by the fact that so many companies have introduced multi-purpose products.

Specification Buying

There is no question that the war stimulated the adoption of specification buying by many large industrial firms. The government, of necessity, bought in this fashion to expedite delivery and for other reasons, and many private companies followed its lead. Today, however, when production is not geared for war, it is to each Lubricant Suppliers interest to discourage this trend, except in special cases, and re-establish brand-consciousness.

Specification buying simply does not function to the best interest of the supplier or the consumer. When goods are sold on specification, it is difficult to justify large research expenditures intended to develop new and better products. Specification buying provides no incentive for a company to produce the best possible product for a specific purpose. Nor does it give due recognition to proved performance of a product. As the pamphlet, "Buy on Performance," published by the Lubrication Committee of the American Petroleum Institute, states: "Any acceptable specification will generally be low enough to include products that will just do the job. And this is what the use of minimum specifications usually brings about . . . the purchase of the most cheaply constructed lubricant that will just pass the minimum limits of the specifications. Certainly the oil or grease selected on this basis will not produce the best service performance."

The less selling by specification that each company does, the greater incentive it has to make progress through research and improve operating efficiency of equipment. It is in the interest of each company to stress repeatedly the factors that are inherent in the term, "brand-name merchandise"—namely, the company's integrity, experience, manufacturing skills, research facilities, and the proved performance of its products. It is impossible to write a specification that takes cognizance of these all-important factors.



"Careful planning and sales control procedures insure the greatest volume of profitable sales." It's a progressive sales manager who can put his ideas to work at the service station.

A Coat of Arms For Today's Sales Manager

by EUGENE B. MAPEL

Vice-President, Methods Engineering Council



"GENE" MAPEL

If a coat of arms were to be designed for the sales manager who will successfully direct marketing activities in the next decade, it would certainly include a Pile Driver together with an equally symbolic Ivory Tower.

To direct sales efforts successfully within the competitive post war marketing pattern that is now apparent, the sales manager must have all of his old time pile driving energy. He will still be a leader of men—who can inspire his sales force to a more profitable use of selling techniques.

The best post war sales managers, however, will find that they must devote an increasingly great portion of their time to ivory tower activities which call for careful planning and sales control procedures. Sales volume may take care of profits for many companies, however, the development of methods which will insure the greatest volume of most profitable sales will characterize the most successful sales organizations this year and in the years to come.

Almost all sales managers today are kept busy enough in answering the jangling telephone, prodding the sales force, adjusting complaints, hurrying up deliveries and a myriad of other daily responsibilities. Few have the time or energy left to devote to the creative planning and analysis work which must be done to keep the business progressing in the future. Furthermore, the administrative strength of the sales manager may be his planning weakness. Many sales managers were elected for their jobs because of their gift of persuading people to "do" rather than their ability to evolve planned procedures to capture the greatest volume of business at the lowest distribution costs.

There's a need for a two pronged attack on marketing problems today. Today's sales manager, harried by his demanding sales administrative job may well wonder how he is going to live twenty-four extra hours each day and develop the split personality to do both of his highly complex jobs at once.

Fortunately, there are a number of management

techniques which when used will relieve him of a portion of this burden.

For the last ten years, management has been a business of production. For the next decade it will as surely be a business which places its greatest emphasis on marketing. Because of the shift in emphasis, the management of a company which has not elevated its sales head to a position of top management responsibility is selling itself and its sales organization short. Decisions concerning product design, new product development, manufacturing quotas, research expenditures and objectives, financial planning and even personnel policies cannot be objectively or realistically made unless business management has the advice and counsel of the sales organization.

Another major job facing the sales manager of today is the selection of a force to fill the gaps in his organization which developed during the war years. Before World War II the country's population was 133,200,000 of which 2,300,000 were salesmen. In other words, one of every 58 persons was engaged in some form of selling. Today there are only 1,700,000 sales men and saleswomen to serve the vastly increased population of 148,700,000—a ratio of one salesman to each 87 citizens.

To restore the pre-war ratio of 1-to-58 we must add 900,000 men and women to the nation's selling force, bringing it up to 2,600,000 members. The most effective sales managers are learning to use scientific selection tests as an aid in increasing their batting average in the choice of potential sales timber.

An unnecessary burden is placed on the sales manager when he must conduct his department's operations without the opportunity of participating in top policy decisions. His time and the time of the sales force can be conserved if useless wrangles or misunderstood objectives can be eliminated. The sales objectives of the company can be achieved more readily when they are not passed through channels to the sales management.

An obvious aid in meeting the dual responsibilities of the modern sales executive, is to hire a strong second

About the Author

"Gene" Mapel is a nationally known sales consultant who believes that sales management must improve organization and develop the selling attitude as well as impart product knowledge if the sales force is to be successful and effective. Mr. Mapel is Vice President in charge of the Sales Consulting Division of Methods Engineering Council, Pittsburgh, and has done work for America's leading companies, including Carnegie Illinois, Bausch and Lomb, Brockway Glass, Wyckoff Steel and many others, large and small.

He is the author of "Master Salesmanship," a training course being used by the American Institute of Cleaners and Dyers and other organizations in both wholesale and retail sales.

Mapel believes that the importance of "sheer inspiration" has been over-estimated and over-emphasized in the training of salesmen. Another of his convictions is that "method" in salesmanship is as important as is "method" in manufacturing and accounting. He is a pioneer in the application of "point of sale" analysis procedures to the solution of sales problems.

As a writer and frequent speaker before sales management groups and sales executive clubs he has conducted sales clinics for national trade associations in addition to his other consulting activities.

man to share the responsibility. If the manager's talents center primarily around the leadership and direction of the sales force, the assistant can be selected to complement him in the planning and analysis phases of the job. If the reverse is true, the opposite type of assistant should be chosen.

This course may not be a practical solution for the smaller business whose volume cannot justify the additional sales expense of an assistant's salary. For many small and medium sized companies, the most economical method of planning for profitable sales volume and establishing control procedures may be to engage the services of a sales consultant. Because of specialized experience, the consultant can establish a system for market and prospect analysis, administrative controls and for the systematic use of the most effective selling methods tailored to the company's needs. When the job is completed and the personnel trained in the use of the system, the company is spared the expense of continuing a large sales planning staff of its own or returning specialized personnel to suitable posts in its organization.

The "management by exception" technique is not new, but a careful exploration of its potentialities may enable the sales manager to devote more creative and fruitful hours to his dual task of sales force supervision and sales planning. Management by exception presupposes the establishment of the best possible methods for increasing the effectiveness of sales efforts. With the entire sales team thoroughly trained to use the best known methods, the manager can devote his time to correcting below par efforts and analyzing the reasons for exceptionally good performance.

Although sales management is complex, there are other factors which are operating to the sales manager's advantage. One is the growth of population during the past decade. The needs and wants of a sizable new block of consumers must be satisfied. The individual sales manager has a greater number of potential customers. And these potential customers have more

money to spend than the customers of twenty years ago.

Strangely enough, a poet gave us the best sales formula for a manager when Rudyard Kipling wrote his familiar quatrain:

"I keep six honest serving men,
They taught me all I knew;
Their names are What and Why and When
And How and Where and Who."

There's still plenty of gold to be mined. But no mining superintendent would send a crew of men with expensive hydraulic mining equipment to conduct operations at a sand dune. He'd use that equipment at a location where a little pick and shovel work had proved there were nuggets to be had.

Yes, market research is important, but equally important is the development of a sales organization with the know-how and courage to do an effective job in "ringing up the sale." This requires training which is a never ending task.

We must never become complacent and assume that our sales force is adequately trained. We must plan and train, plan and train, and never stop this process.

Books and Publications

... About the Industry

Diesel Lubricating Oils and Basic Principles of Lubrication

Published February, 1949; price, \$1.50.

These two lectures, given at the May, 1948, ASME Oil and Gas Power Conference, review the steps involved in the manufacture and classification of lubricating oils—particularly their use in internal combustion engines of the Diesel type; the methods of testing new and used oils, and the general significance of the different test methods; the factors and principles of fluid film lubrication, and their engineering application.

Elements of Diesel Engineering

by Orville L. Adams

368 pages, fully illustrated, \$5.00

Here you will find explained the principles and practices of Diesel Engineering—Diesels as they are worked, not as theorized. The author, Orville L. Adams, is widely-known in the publishing as well as the academic fields, and to an extent seldom found in one man, he combines practical experience with an intimate knowledge of the requirements of school and college. Appendix 5 is devoted to tests in specifying Lubricating Oils. There is a comprehensive chapter on Diesel Fuels and Lubricating Oils.

American Petroleum Refining

by H. S. Bell, C.E., Consulting Engineer

640 pages, illustrated, 6 1/4 x 9 1/4, \$7.50

From the crude storage tank to the drum or steamer carrying the finished product, every step in refining engineering and operation is given in full. A few of the chapters that will be of interest to the lubricating grease industry are: Blending and Compounding, methods and equipment used in gasoline and lubricating oil blending; Filtration, methods used; Packages, this comprehensive account covers all types of containers; the section on can and drum are especially up to date and embody the best of present-day practice.

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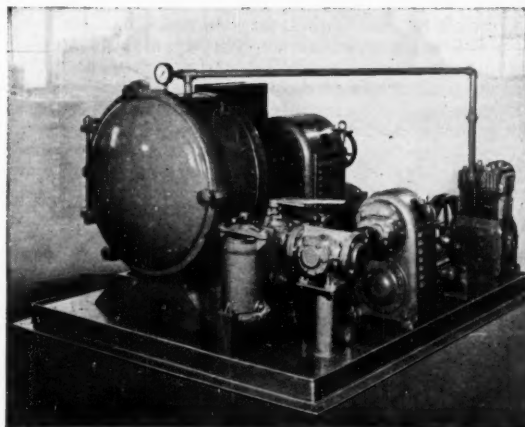
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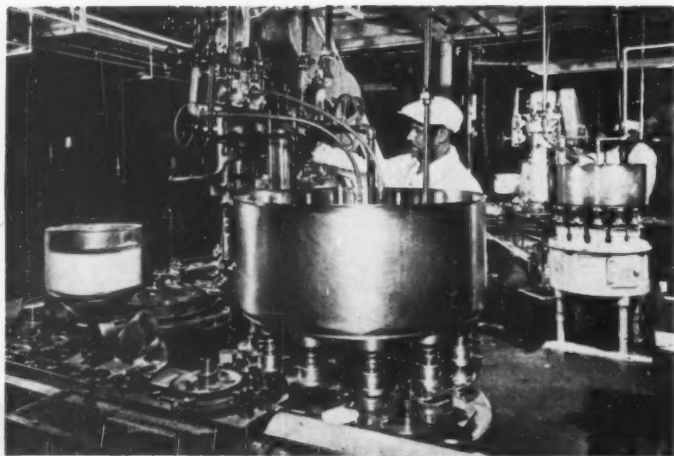
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Modern Greases Mean Simplified Lubrication

CURRENT GREASE TECHNOLOGY continues to follow a trend toward the development of multi-purpose greases. These products not only simplify grease lubrication through their flexibility, but the many problems attendant to the manufacture, packaging, marketing and warehousing of greases are diminished. The first market for multi-purpose greases was found in the industrial field where processes involving both heat and water presented severe lubrication problems requiring the use of several specialized products. The unique combination of properties of the newer greases made it possible to simplify these lubrication problems since one product could be used throughout the plant. Industrial success led to their use in the automotive field and service stations today need stock but one product for all their grease requirements.

Multi-purpose greases are modern products in the grease field, most of their development having occurred within the last ten or twelve years. Considering what has been accomplished in this short time and allowing for the normal progress which comes with experience, it appears that such products are destined to play an ever increasing role in the application of greases. To date they are an outstanding example of the efforts made to simplify grease lubrication.

Current developments in grease technology continue to show a definite and commendable trend toward products which make simplified lubrication possible. Doubtless, the early grease chemist or even the skilled grease maker who preceded him often speculated on a single type product which could serve adequately the various lubrication purposes for which greases were used. Such a product not only would offer flexibility in use, but the problems attendant to manufacture, packaging, marketing and warehousing would be diminished. As grease manufacture became more standardized, men began to inquire into the processes taking place in their

kettles and to seek the means of producing a better product. With this search, came greases made with new bases. When the full appreciation of their characteristics became clear, it was evident that the means were at hand to realize that combination of properties required by a multi-purpose grease. Within the last few years, there has been presented a number of papers discussing these newer products in considerable detail. It is the purpose of this paper to review briefly and to describe generally the manner in which greases of this type have been used efficiently to achieve greater simplicity in lubrication.

Before getting too involved in the subject, a word concerning nomenclature is in order. Initially, these greases were most generally referred to as "all-purpose" greases. It is encouraging to note a more recent trend toward the use of the terms "multi-purpose" or "general purpose." As originally conceived, "all-purpose," to the grease chemist, meant substantially a product which would combine the high temperature characteristics of sodium base greases with water resistant properties of calcium base greases. Unfortunately, from this simple and more or less valid concept, various misconceptions have attached themselves to the term so that it has become less clearly defined. For example, to some, "all-purpose" would limit the class to a single NLGI grade, while others would expect the product to possess such specialized properties as extreme pressure characteristics. No such meaning was originally intended and the terms "multi-purpose" or "general purpose" doubtlessly express the thought more accurately and leave less room for argument. In any case, for those who apply the literal meaning to such terms, the use of "all" in the name is admittedly too inclusive to be acceptable.

Up to the present time, barium and lithium soaps are utilized in most of the recognized multi-purpose

greases possessing the characteristics of high melting point, water resistance and mechanical stability. A special type of calcium soap should also be considered in this category. More recently and of more limited distribution, but of great potential promise, are greases utilizing strontium base soaps. All of these products are making their mark today. Large and small marketers are showing an increasing interest in multi-purpose products which perhaps reflects only the increasing awareness on the part of the purchaser of the advantages they offer. When we consider their relative newness and allow for the normal developments which come with greater experience, the future for this class of grease is bright indeed. Although the importance of the various soaps used in the manufacture of multi-purpose greases is recognized, in the discussion that follows barium soap greases will be referred to specifically since these greases were the earliest of the multi-purpose class to be marketed on a large commercial scale.

Although barium soap greases first established themselves in the industrial field, it was with their introduction into service stations that they became more widely known as multi-purpose products. Oddly enough, even though the properties which make these greases so attractive in service station use today were recognized and exploited in their early industrial applications, the "multi-purpose" concept was not widely publicized. Tradition and habit are indeed powerful forces and generally oppose any change in the status quo. It is interesting to note that several years before barium greases found wide application in service stations, a quiet start had been made in a portion of the West Coast marketing territory. Although not accompanied by fanfare and advertising, an appreciable number of stations in that area initiated the use of barium soap grease of the type used in industry. It was subsequent to this that a type of barium grease, manufactured with the service station in mind, was placed on the market.

During the period that the product has been actively recommended for general service station use, the reaction of the operators has been most favorable. The obvious advantages to be gained from the use of a single grease for the lubrication of the chassis, wheel bearings, water pump, universal joints and springs have made the program most attractive. There has been no tendency to return to the use of chassis lubricant or other specialized greases even though there is a substantial difference in the per pound cost between the two products. In a survey made approximately a year ago, the observations made during the initial field tests were confirmed. The use of a multi-purpose grease had resulted in a saving of time and equipment, had minimized the chance of error and had given better performance than the combination of greases used previously.

As might be expected from such a new approach to automotive lubrication, there were certain problems to be overcome. The proper consistency for wheel bearing lubrication had to be balanced against the important consideration of pumpability over a wide range of atmospheric temperatures.

Chassis grease guns have been designed traditionally to handle very soft or fluid greases. When the change to a single multi-purpose grease was made, a product in the NLGI 2 classification was supplied. Field tests indicated that the product, although it pumped at a slightly reduced rate, could still be handled by the typical service station equipment. Some reports that the

grease would not feed properly to the foot valve were received. Actually, little difference is apparent until the level of the grease approaches the bottom of the container. By simply refilling or changing to another container a little sooner than usual, the problem is taken care of adequately.

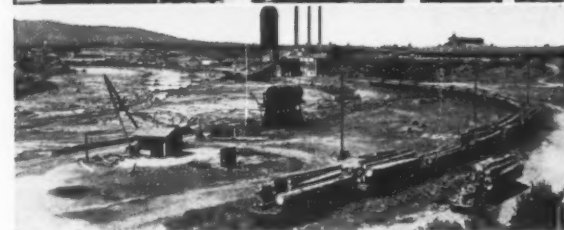
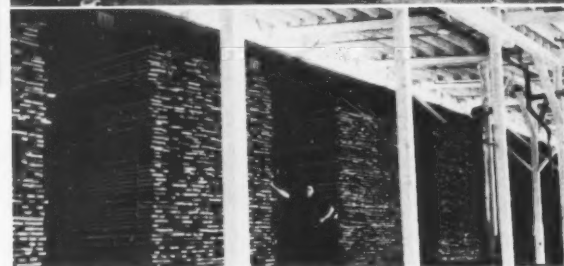
In changing to a multi-purpose grease, which involves the use of a heavier than usual product for the chassis, any difficulties associated with equipment deficiencies or poor maintenance are magnified. Certainly a grease gun that is laboring with a fluid chassis lubricant will not take kindly to an NLGI 2 grease. Likewise, long lines, small diameter delivery hose, low air pressure and partially plugged valves and screens contribute their share of trouble. Even with the best of maintenance, there is a definite need for dispensing equipment designed to adequately handle the heavier multi-purpose greases which have been demonstrated to have superior service characteristics. The best answer to the problem of pumpability, which in some areas is related more to temperature conditions than it is to the dispensing equipment, has been to use a lower viscosity base oil in compounding the grease.

From a service standpoint, it has been found that the heavier grease is a superior chassis lubricant forming a better seal against dirt and moisture, showing less tendency to be forced out, better adhesiveness and less tendency to drip, thereby giving squeak-free service for a longer period. Spring packing has proved to be particularly successful with barium grease. Its water resistant properties are important in this success. Furthermore, since the tendency to drip is minimized, an effective pack is maintained over a longer period of time. This "no drip" characteristic is noted with enthusiasm by the operator since it is a substantial aid in good housekeeping.

As the grease found wider application, scattered reports were received indicating that the product was softening in wheel bearing service. Inasmuch as field testing, including truck service, had not shown any difficulty in this respect, it appeared that factors not present in the field tests were responsible. Furthermore,

by
FRANK OTT
Sales Service
Union Oil Co.
of California
Los Angeles





BARIUM GREASE IN ACTION

The Brooks-Scanlon Inc., mill utilizes advantageously a multi-purpose barium grease in drying kiln cars.

Fred Meyers a local consignee, points to a Zerk fitting which is used with multi-purpose barium grease for lubricating roller type bearings. Previously, the lubricating oil used necessitated frequent lubrication and costly replacements of both wheels and bearings, due to the inability of oil to stand the extreme temperatures of 190°F. in dry kilns. Wheels are now lubricated every three to six months with multi-purpose grease.

The second illustration shows a kiln car loaded with lath and ready to go to the kiln. Mr. Meyers shows the wheel type.

Four cars of lumber, just removed from the kilns (third illustration). The approximate weight before entering the kiln was ten tons.

View of the entire Brooks-Scanlon Inc., mill on Deschutes River, Bend, Oregon.

experience accumulated on the so-called industrial type barium grease (in contrast to the automotive type under discussion) in both passenger cars and trucks had shown no wheel bearing problems. Investigation of these reports indicated quite clearly the source of the trouble. Essentially it was caused by overpacking and by inadequate cleaning of the wheel bearing assembly which resulted in mixing greases of different soap bases. By pointing out these factors wherever difficulties occurred and by stressing proper wheel bearing service, the station operators have come to appreciate the importance of doing the job right.

As indicated in the beginning of the paper, barium greases became widely known as multi-purpose greases with their introduction into the field of automotive lubrication. Actually, the particular grease introduced into this service was a newcomer in the barium line. Barium greases were developed originally for industrial applications and until recent years were confined to this service. This type of grease is an unctuous product of non-fibrous or buttery texture in contrast to the feathery, stringy, cohesive texture of the automotive type product. Of particular interest in industrial applications are the good high-temperature characteristics of these greases and their high water resistance. Associated with water resistance is their ability to protect surfaces against the corrosive action of salt water and industrial process liquors. Still another characteristic of considerable interest is their stability on mechanical working. Since many industrial processes include lubrication require-

ments involving all of these characteristics, a single grease which can lubricate adequately under these conditions simplified the entire lubrication problem and eliminates the need for a number of specialized products.

From the nature of barium soap greases, in comparison to conventional products, it is evident that the particular virtue of this type of lubricant lies in its wider use range. It is true that barium soap greases are being used for many lubrication purposes where the conventional type greases would give equivalent service. Such greases, however, would not be equally serviceable for all of these applications. Consequently, where a variety of equipment is operated under varied conditions, multi-purpose greases are particularly attractive from a warehousing as well as from an application standpoint. These advantages more than compensate for the added cost of using such greases in applications where cheaper products would suffice, and consequently the entire grease requirements of many plants have been standardized on a single multi-purpose grease. It might be of interest to review some of these applications.

In the canning or packing industry the versatility of barium grease has proved to be of particular benefit. The equipment in these plants is washed regularly with water and steam. In addition to moisture, the presence of certain fruit juices creates a corrosion problem. Multi-purpose barium grease is giving excellent service under these conditions in the various types of equipment used in the canning industry.

A good example where an efficient multi-purpose



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grease can be most advantageous is demonstrated in a kelp processing plant. The plant, while not particularly large, has over 600 electric motors. In addition, there are salt water pumps, dryers and special chopping machinery to cut up the kelp. Bearing speeds range up to 3600 rpm and temperatures as high as 200° F. are not uncommon. Steam, salt water, kelp juice, sand, filter aid and acid solutions are ever present contaminants. Under these conditions, the frequency of bearing failure constituted a major problem. The problem was particularly bad in the case of the salt water pumps. These units are centrifugal pumps powered with 7½ h.p. motors and turning at speeds up to 3600 r.p.m. Salt water enters the bearings, washes out the lubricant and failure results from lack of lubrication and from corrosion. Bearing failures in as little as forty-eight hours were experienced.

Today the entire plant, including the sea-going kelp barges, is lubricated with one grade of barium grease. Bearing life, in severe applications, has been extended from a matter of days to periods of six to eight months. Bearings that formerly were replaced every few months now give good service for a year or more. In addition to the convenience of using one product, lubrication intervals were lengthened in many instances. While it is probably true that this plant could be adequately lubricated with proper application of a number of conventional type greases, it is not likely that any one product except a truly multi-purpose grease would ever be successful.

A ceramic processing plant is being lubricated almost entirely with multi-purpose barium grease. This plant has equipment involving ball, roller and sleeve type bearings in diameters from two inches to fourteen inches

operating at speeds of less than 50 to over 3000 r.p.m. and at temperatures in excess of 150° F. Here dust and heat are the major problems.

In the Northwest a great number of kiln cars are used to carry lumber into drying kilns. They remain in the kilns for 80 to 90 hours at a temperature of about 190° F. The wheels turn on 1¼ inch inside diameter roller bearings. In two accounts alone, over 2200 of these cars are in service. An NLGI 0 grade of barium grease has been used successfully in this application. The lighter NLGI grade is used because outside application temperatures go below 0° F. during the winter months and a heavier grease makes it more difficult to push the cars. The use of this product is most convenient since it has found wide application as a track roller lubricant, and inasmuch as these two accounts operate a fleet of 35 tractors, the one product takes care of both services. Other applications in the saw mill industry include debarking equipment, lathes, conveyor belts, various types of saws, choppers, edgers, etc., all of which are successfully lubricated with multi-purpose barium grease.

The list of applications is as varied as industry itself. While it may be argued that industry's lubrication requirements can be met satisfactorily by conventional greases, with multi-purpose greases the whole job can usually be done with one product. Multi-purpose greases, insofar as individual applications are concerned, may show little if any superiority over the better conventional products. The case for multi-purpose greases rests on their ability to do more jobs well at a saving in time, equipment and inventory and in eliminating costly mistakes.

The possibilities with respect to future development



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of multi-purpose greases are very encouraging. They are modern products as grease manufacture goes and much has been accomplished in a relatively few years. Not so many years ago, the grease literature indicated quite clearly that greases of acceptable quality could not be prepared from barium soaps. While lithium soaps have been known for some time, until recently their only use was for specialized products. Strontium soaps even today are still in this category, although their potentialities promise much.

All these greases are complex products and their development represents the invasion of a new field. We consider that, in spite of the work that has been done, the grease industry is only beginning to really know

these products. The fact that they are more complicated in nature than the conventional greases offers greater opportunity for their continued improvement and permits greater benefits to be realized from their study. From the experience gained in the development of barium greases thus far and from the current reports concerning progress in other multi-purpose grease activity, it appears probably that such products are destined to play an ever increasing role in grease technology. They are certainly the most satisfactory answer to date to the problem of simplifying grease lubrication.

Paper presented to the Lubrication Committee of the Division of Marketing, American Petroleum Institute, during its Winter Meeting at the Jefferson Hotel, St. Louis, Mo., February 23, 1949.

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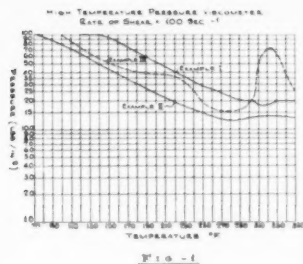
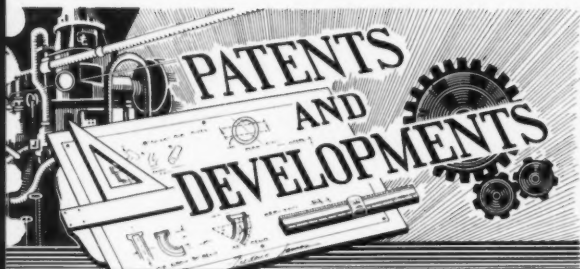
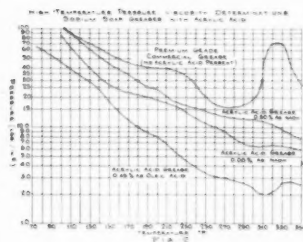


FIG. 1



grease shows a decided increase in viscosity at higher temperatures. Fig. 2 shows the effect of acid and alkaline acrylic acid in grease, compared with no acrylic (U. S. 2,468,099).

DRY GRAPHITE LUBRICANT—Neolube is a fast drying graphite solution which leaves a dust-free and permanently adhering coating on metal and non-metal surfaces. It is useful for contact points and electronic tube prongs (Prod. Engrg. 5/49 p. 3).

DIETHANOLAMINE FATTY ACID SOAP—A Swift & Co. patent describes the preparation of reaction products of primary and secondary alkylolamines with higher fatty acids by reacting an excess of the amine with an acid of 8-14 carbon atoms at 150° C and aging at 50°-80° C (Can. 456, 218).

ANTISEIZURE PROPERTIES OF BOUNDARY LUBRICANTS—According to Thorpe and Larsen, the antiseizure properties of boundary lubricants are usually dependent on shearing of tightly bound films chemically formed in place on the rubbing surfaces, whereby shearing of metal-to-metal junctions is avoided. Evaluation is done by a modified 4-ball apparatus. (Ind. & Engrg. Chem. 5/49 p. 938).

HIGH TEMPERATURE GREASE—

A patent issued to Standard Oil Development Co. discloses the preparation of a high temperature grease consisting essentially of 60-95% of a mineral base lubricating oil, 5-35% of an alkali (Na) soap of a fatty material, and the sodium salt of 0.1-5% of acrylic acid for the purpose of decreasing the solubility of the sodium soap in water. Fig. 1 shows the effect of temperature changes on the pressure viscosity of greases with (Examples I and II) and without (Example IV) acrylic acid. It will be observed that the acrylic acid-free

HIGH TEMPERATURE PERFORMANCE OF SILICONE FLUIDS IN JOURNAL BEARINGS—

An article by Brophy and Larson covers the use of dimethyl silicone polymers and methyl phenyl silicone copolymers. For satisfactory performance, either a long break-in or a silicone pretreatment of the bearings is desirable (ASME paper, Rochester, 11/48, n. 929).

ALUMINUM SOAPS—Gray and Alexander show that the product of metathesis of an alkali soap and an aluminum salt is an absorption complex of fatty acid on alumina. Combination occurs during drying. A polymeric formula is proposed based on six-fold coordination aluminum-oxygen octahedra. When these join through an edge a monosap forms; when through an apex, a disap (J. Phys. & Coll. Chem. 1/49, p. 23).

DEVELOPMENT OF LUBRICATING GREASES—

A historical development of the different types of greases is discussed by Matthews of Battenfeld Grease & Oil Corp. (Petr. Engr. 5/49, p. C-41).

CLEANING BEARINGS—Fast cleaning of bearings and other intricate parts with high pressure sprays has been developed, using pressures of 75-120 psi, doing the work in half the time required with 40 psi, and without any noticeable damage (Iron Age 5/19/49, p. 79).

COLD METAL WORKING LUBRICANT—

Stepwise lubrication of the working surface of the tool is accomplished by Gilron Prods. Co. by simultaneously supplying between the work and tool a dry organic low melting point lubricating film-forming and water liberating material and a plurality of dry inorganic hydrated glass forming materials having melting points below 1000° C and selected to provide, stepwise, a range of melting water liberating and glass fusion points all below the welding point of the metal and tool (U.S. 2,469,473).

DRY LUBRICANT—In another patent, the same firm covers a coating material for admixture with water for coating a piece of blank metal stock and forming on it a permanent, self-adherent, dry homogeneous lubricating and protecting film consisting essentially of 10-33% of a water-soluble high titre soap having a melting pt. of 36-42°, and 90-67% of borax. (U.S. 2,470,062).

STAINLESS CLAD STEELS FOR KETTLES—

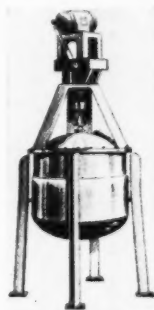
Alan Wood Co. of Conshohocken, Pa. is fabricating kettles, vats, tanks and stills of stainless clad steel which can be drawn, welded, etc. thus combining resistance with malleability, ductility and strength of plain carbon steel (Chem. Proc. Prev. 4/49 p. 19) (See cut).

MACHINE TOOL LUBRICATION—

Discussion of machine tool lubrication on the production line, including greasing, etc., may be found in the May, 1949, issue of "Lubrication" published by the Texas Co.

LUBRICANT SUITABLE FOR USE UNDER AQUEOUS CONDITIONS—

One patent issued to Tide Water Associated Oil Co. describes a lubricating composition suitable for use under aqueous conditions and characterized by forming upon admixture with



water a water-in-oil emulsion having lubricating properties. It consists of a lubricating oil in major proportional amount having dissolved in it (a) at least 1%-15% of a blown semi-drying oil (fatty) and (b) about 0.05-1% of (1) a hexitol anhydride partially esterified with a fatty acid of at least 12 carbon atoms and (2) about 0.05-1% of a polyoxyalkylene derivative of a hexitol anhydride partially esterified with a fatty acid of at least 12 carbon atoms (U.S. 2,470,537).

HOT NECK GREASE—Union Oil Co. of Calif. has patented a lubricating grease containing 5-30% asphaltic residue, 10-40% of mineral lubricating oil, 10-25% of inert non-abrasive earth filler, and at least 15% of the saponification products of wool fat and a quantity of other soaps of fatty acid materials not greatly exceeding the proportion of wool fat soaps (Can. 456,463).

HALOGENATED FOOTS OIL—A Lubrizol Dev. Corp. patent discloses the production of a halogen and sulfur containing reaction product obtained by treating halogenated foots oil with an inorganic sulfur-bearing material (sulfides, polysulfides, etc.) and sulfur chloride in ratio of 1:1 at 200°-600° F. (U. S. 2,468,089).

INCREASING MELTING POINT OF SODA GREASES—The melting point of a soda base grease can be increased by adding 0.5-5% of a low molecular weight fatty acid such as glycolic or lactic and heating to 500° F (Standard Oil Dev. Co. U.S. 2,468,098).

GREASES IN ANTIFRICTION BEARINGS—Gustafson of Marlin-Rockwell Corp. states that 90%

of all anti-friction bearing failures are due to dirt. Care should be taken when grease is applied, not to introduce foreign matter to which these bearings are particularly sensitive (Elect. Mfg. 5/49 p. 115).

HOW TO TEST BEARING GREASES—This is a resumé of tests made at Fafnir Bearing Co. for pre-lubricated ball bearings before their approval, and can be applied to other applications (Amer. Machinist 5/19/49 p. 102-6).

PHYSICS AND CHEMISTRY OF HYDROCARBON GELS—Rideal discusses this subject, the interest in which really began with flame thrower fuel (Nature 4/30/49 p. 665-6).

ALUMINUM SOAP GREASE—One Socony-Vacuum Oil Co. patent covers a method of preparing an aluminum soap grease by making a solution of aluminum alkoxide in a hydrocarbon lubricating oil solvent, adding a higher fatty acid to the solution to convert the alkoxide to an aluminum soap and release alcohol, cooling, and adding a small amount of moisture to convert the fluid lubricant to a grease (U.S. 2,469,041).

PATENTS AND APPLICATIONS
Brit. Appl. 10474/49 (Standard Oil Dev. Co.)—Lubricating grease.

Brit. Pat. 620,825 (Ganwick Estates)—Greasing of engine starting handles.

Brit. Pat. 621,173 (Tecalemit, Ltd.)—Grease guns and like lubricant dispensing devices.

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By H. L. HEMMINGWAY
 Vice-Chairman, N.L.G.I. Technical Committee

The summer doldrums seem to have taken over the activities of the Technical Committee. There is less to report this month than has been true for any month since the first of the year.

Mr. Gus Kaufman, Chairman of the NLGI Editorial Subcommittee, has set up a series of standards for the suitability of papers proposed for publication in the *Spokesman*. Originality, readability, and freedom from commercialism are stressed. Thorough justification of experimental methods and results, and limitation of subject matter to the interests of NLGI membership are also suggested. Mr. Kaufman's study of the requirements for papers has been carefully prepared and should contribute materially in maintaining the high standard of NLGI papers.

Standards for Suitability of Papers for Publication in "The Institute Spokesman"

1. Any paper accepted for publication must represent a distinct contribution to the literature on the subject either through the contribution of significant original material or by collating previously scattered or inadequately assembled information in a particularly useful form.
2. The subject matter should be limited to lubricating greases and their principal ramifications such as research, development, manufacture, testing, technical service, and statistical information and application. Papers may also present literature surveys and philosophical or his-

torical information of interest to the membership.

3. All papers must be free from undue commercialism or sales propaganda.
4. Technical papers must include the necessary experimental data to justify conclusions.
5. Reproducibility of results must be amply proven.
6. Interpretations of data must be logically clear, scientifically ethical and statistically sound.
7. Where possible, correlation of experimental data with actual field performance should be attempted.
8. Papers should be written in concise, grammatically correct and easily readable style.

Both Mr. Kaufman and Mr. H. M. Fraser, Chairman of the Subcommittee on Procurement of Technical Papers, have been active in smoothly organizing the handling of technical papers. Within a week after Mr. Fraser has received a copy of a paper from the author, he transmits it to Mr. Harr' Bennetts and to Mr. Kaufman, and the members of his Subcommittee, Messrs. Georgi, Miller, and Adams. These gentlemen read and transmit their comments to Mr. Kaufman within three weeks. Mr. Kaufman then sends the summarized comments to Mr. Bennetts who handles any revisions with the author. Obviously, this procedure provides for quick, expert and sympathetic consideration of papers. Interesting technical papers are always in demand for the *Spokesman*. If any readers of this column have prepared a paper, or can suggest

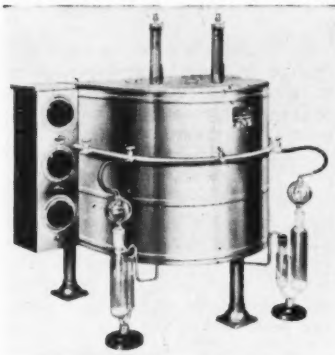
one, please get in touch immediately with Mr. H. M. Fraser, International Lubricants Co., New Orleans, La.

The Chairman of the NLGI Subcommittee on the NLGI Classification of Greases, H. L. Hemmingway, has received various suggestions for consideration from the members of the Subcommittee, as follows:

1. Present system has too many grades.
2. Extend system to include block greases and at least two grades of semi-fluid or taxable greases.
3. The thirty-point penetration range for individual NLGI grades is too narrow.
4. Investigate means of classifying winter greases by measurements taken at low temperature.

While the present NLGI classification of greases has brought order out of what tended to be chaos, there is no desire to change it just for the sake of change, any suggestions based on actual evidence will receive careful consideration by the Subcommittee.

Minutes of the ABEC-NLGI Cooperative Committee on Grease Test methods meeting of March 24, 1949, which have been previewed in recent months in this column, have been distributed by Mr. Bennetts.



Tube Gives Rapid Method Of Sulfur Determination

The Vertical Tube Sulfur Determination Apparatus was engineered to give a rapid method of sulfur determination for the Petroleum and Organic Chemical Indus-

tries. Multiple analysis of a variety of oils, paints, intermediates and other liquid organic compounds can be performed simultaneously.

The Pyrex tube of older methods is replaced by a stainless steel tube. Sulfur determination in a greater variety of materials is possible with the steel tube.

Each of the six vertical tubes is heated by a "Ful-Kontrol" heater which reaches temperatures as high as 1,525° F. Precise control of heat from 0 to 320 watts is realized with the built-in auto-transformers.

Nickel chromium elements embedded in special refractories are protected by a steel tube jacket. Insulation of glass wool separates all tubes to promote individual operation. Glass wool is also used to insulate the outer surfaces of the instrument.

Tubing for connection to a vacuum line has six outlets with shut-off valves at each outlet. The housing is constructed of polished stainless steel, having an insulating top and bottom of Electrobestos one inch thick. All connections at the bottom of the apparatus are safely covered with a screen. Overall dimensions: 22" long, 24" high, 36" wide.

The tube was developed by the Precision Scientific Company, 3737 W. Cortland St. Chicago 47, Illinois.

Some of the papers which will be of interest to our industry that will be delivered October 12, at the ASTM First Pacific Area National Meeting are as follows.

Does Service Performance Justify Higher Quality Lubricating Oils?

—W. B. Bassett, Lubrizol Corp., Cleveland, Ohio.

High Detergency Motor Oils—A. B. Boehm, Enjay Co., New York, N. Y., and C. O. Tongberg, Standard Oil Development Co., New York, N. Y.

Progress Report on Ordnance Field Tests of High Sulfur Fuel in Series 2 Lubricating Oils—N. L. Klein, Office of Chief of Ordnance, Department of the Army, Washington, D. C.

Operating Experience and Problems Relative to Lubricating Systems of Steam Turbine Sets for Utilities—V. Estcourt, Pacific Gas and Electric Co., San Francisco, Calif.



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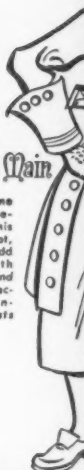
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Designed to eliminate contamination in dispensing motor oil, this promising unit is the newest member of Zee Line lubricating equipment, marketed by National Sales, Inc., 812 North Main, Wichita, Kans.

Dis-Pen-Zor is primarily for farmers, contractors, fleet operators, city and county maintenance crews and others frequently using bulk oil.

Elliott said the unit eliminates the need of using dirty measuring cans to move bulk oil from drum to crankcase. He said no measuring devices are needed; because the Dis-Pen-Zor is designed to deliver a quart of oil with two strokes.

The Dis-Pen-Zor fits standard drums with 1½" and 2" openings. It has a Neoprene-type bung adapter that assures a positive all-weather seal, and the Neoprene cap prevents the nozzle from dripping when not in use.

The "breather" on the bung adapter equalizes pressure and temperature preventing formation of moisture in the drum. It is located sufficiently high to prevent surface rain water from seeping in and contaminating the oil.

The Dis-Pen-Zor handles all SAE grades of motor oil used under seasonal operating temperature conditions.

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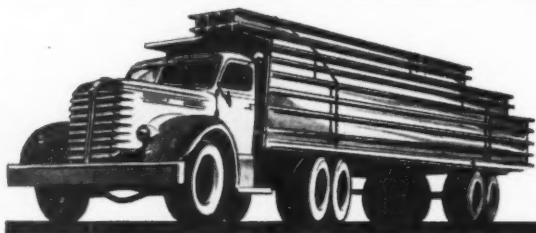
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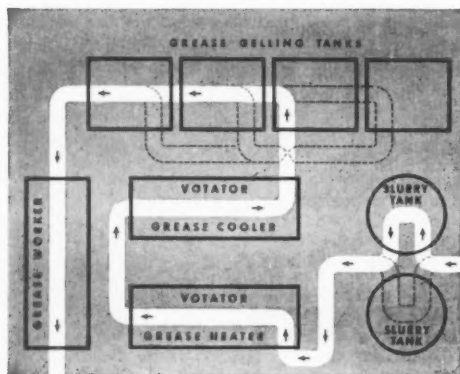
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